

REMARKS

Applicants acknowledge the indication of the allowability of the subject matter of Claims 16 and 17, as set forth in paragraph 17 of the Office Action. In particular, the latter claims would be allowable if rewritten in independent form. However, for the reasons set forth hereinafter, Applicants respectfully submit that both Claims 16 and 17 are allowable in their present dependent form.

The declaration has been objected to in paragraph 1 of the Office Action, on the ground that the country of the foreign application on which priority is claimed does not match the country specified in the declaration. In response to this ground of objection, Applicants note that an Application Data Sheet was submitted with this application as originally filed and that a supplemental Application Data Sheet was submitted on February 10, 2004, along with the Response to the Notice to Filing Missing Parts of Application, and the executed Declaration. Both the original Application Data Sheet and the Supplemental Application Data Sheet correctly identified the country of the foreign application on which priority is claimed as Great Britain.

Under 37 C.F.R. §1.76(d)(2), the information contained in an Application Data Sheet or a Supplemental Application Data Sheet will govern when inconsistent information is supplied at the same time by a Declaration, with certain exceptions not relevant here. Accordingly, Applicants respectfully submit that the submission of the Supplemental Application Data Sheet on February 10, 2004 was effective to correct the country of the

foreign application on which priority is claimed, and that it is therefore unnecessary to submit a new declaration.

In response to the objection to the drawings, as set forth in paragraphs 2 through 4 of the Office Action, Applicants have submitted replacement sheets herewith, as referred to in paragraph 5 of the Office Action. The replacement sheets address each of the issues raised in paragraphs 2 through 4, and accordingly are believed to be proper and consistent with the numbering provided in the specification. Accordingly, reconsideration and withdrawal of this ground of rejection is respectfully requested.

Paragraph 6 of the Office Action notes that the listing of references in the specification is not a proper Information Disclosure Statement and that therefore, unless certain references have been cited by the Examiner on Form PTO-892, they have not been considered. In response to this observation, Applicants note that an Information Disclosure Statement was submitted with the original application papers on November 6, 2003, and included copies of those references which were cited by the British Patent Office in the prosecution of the corresponding British application. The PTO form 1449 which was attached to that Information Disclosure Statement has been initialed by the Examiner, indicating that the references submitted therewith have been considered.

In response to the Examiner's comments regarding references listed in the specification, Applicants have submitted herewith a Supplemental Information Disclosure Statement referencing three U.S. patents mentioned in the disclosure. Regarding the remaining two items -- both of which are nonpatent literature -- Applicants will promptly

submit copies in a further Supplemental Information Disclosure Statement, to the extent that they are available.

Claims 16 and 17 have been rejected under 35 U.S.C. §112, second paragraph, based on certain formal issues cited by the Examiner in paragraphs 8 through 10 of the Office Action. In response to these grounds of rejection, Applicants have amended the claims in a manner which addresses and is believed to resolve each of the cited formal issues. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

Claims 1, 2 and 5 have been rejected under 35 U.S.C. §102(b) as anticipated by Zhou et al (U.S. Patent No. 5,295,355), while Claims 1-5 and 15 have been rejected under 35 U.S.C. §103(a) as unpatentable over Wang (U.S. Patent No. 6,378,312) in view of Zhou et al. In addition, Claims 6-13 have been rejected as unpatentable over Zhou et al, and Claim 14 has been rejected as unpatentable over Zhou et al in view of Chan et al (U.S. Patent No. 5,107,683). However, for the reasons set forth hereinafter, Applicants respectfully submit that all claims of record in this application distinguish over the cited references, whether considered separately or in combination.

In Zhou et al, there are fins on the regenerator tube. However, those fins are present only at the hot end 2' of the regenerator tube and are not arranged along the regenerator tube as recited in Claim 1. The fins in Zhou et al serve as radiators, as noted at Column 3, lines 44-46 and Column 4, lines 13-14, for rejecting heat from the regenerator tube. Thus, the fins in Zhou et al are quite different in both construction and function from the fins provided by the present invention.

As recited in Claim 1, the fins are disposed along the regenerator tube, and serve to absorb heat from the surrounding atmosphere, as described, for example, at page 6, line 25 through page 7, line 12 of the specification. The wording of Claim 1 has been clarified in regard to this distinction, reciting in particular that, "a plurality of fins associated with the regenerator tube are arranged along the regenerator tube to transfer heat from an atmosphere surrounding said tubes to the regenerator tube". The latter amendments are supported in the application as originally filed, at least in Claim 16, and at page 6, line 25 through page 7, line 12, especially page 7, lines 6-8.

Since the subject matter of Claim 1 differs from Zhou et al in at least these respects, Claim 1 is not anticipated by Zhou et al.

With regard to the alleged obviousness of Claims 1-5 and 15 over the combination of Zhou et al and Wang, the Office Action indicates that it would have been obvious to modify the pulse tube refrigerator of Wang by adding fins onto the regenerator tube in the manner of Zhou et al. However, as noted above, the fins of Zhou et al are different in construction and purpose from the fins of the present invention. Thus, any such combination of Wang and Zhou et al would not result in the presently claimed invention. Moreover, in view of the differing purpose of the fins in Zhou et al, and those of the present invention, there would be no motivation, and nothing to be gained by further modifying Wang to replicate the present invention, as suggested.

In this regard, the Office Action states at the bottom of page 5 that the fins of Zhou et al are radiator fins for rejecting heat from the hot end of the regenerator. Accepting this characterization as accurate for the sake of the present discussion, the purpose of the radiator

fins in Zhou et al differs from that of the fins recited in the claims of the present application, which are not mounted specifically at the hot end, as disclosed in Zhou et al.

With regard to Claims 6-13, the Office Action states that it would have been obvious to replace the fins of Zhou et al with the fins recited in these claims. Once again, however, Applicants note that the fins of Zhou et al are provided only at the hot end for radiating heat away from the regenerator to the surrounding atmosphere, while the fins of the present invention serve essentially the opposite purpose, serving to absorb heat from the surround atmosphere and to convey that heat to the regenerator material. The structures of the fins recited in Claims 6-13 would be unnecessary and unsuitable for the purpose of Zhou et al, since they would not be located only or mainly at the hot end, but would rather be distributed over the length of the regenerator tube. Stated otherwise, given that the purpose of the fins in Zhou et al is to radiate heat away from the regenerator tube, there would be no utility in distributing the fins along the tube, at portions away from the hot end, and a person skilled in the art would recognize that there is no utility in doing so.

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any

Serial No. 10/702,046
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deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #038871.52853US).

Respectfully submitted,

A handwritten signature in cursive script, reading "Gary R. Edwards", written over a horizontal line.

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Attachments – Replacement Sheets showing Figures 1-7G

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Amendments to the Drawings:

The attached sheet of drawings includes changes to Figs. 1-7G. The replacement sheets address each of the issues raised in paragraphs 2 through 4 of the Office Action.

Attachment: Replacement Sheet